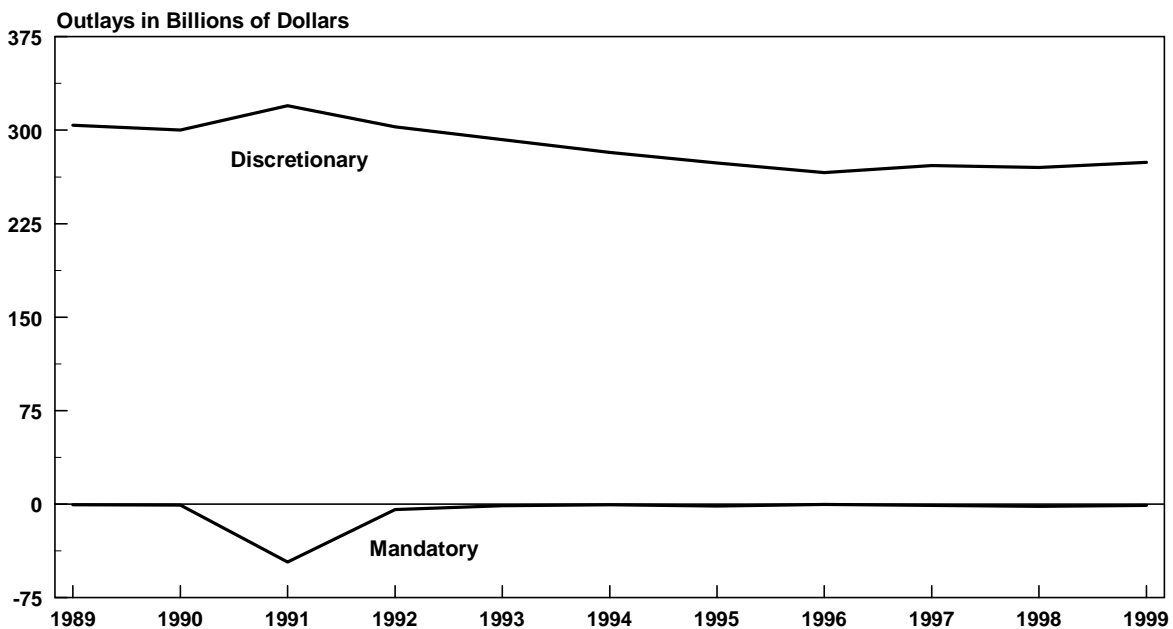


050

National Defense

Budget function 050 comprises spending for national defense. Although 95 percent of that spending falls within the Department of Defense, function 050 also includes the atomic energy activities of the Department of Energy and smaller amounts in the budgets of other federal departments and agencies. CBO estimates that discretionary outlays for function 050 will be about \$274 billion in 1999. Discretionary budget authority of \$280 billion was provided for national defense in 1999. Mandatory spending in that function usually shows negative balances because of payments made to federal agencies. In 1991, those receipts were unusually large because of reimbursements by foreign governments for some of the costs of the Persian Gulf War. Over the past decade, outlays for national defense have declined from 27 percent of federal government spending to 16 percent.



050-01-A REDUCE U.S. FORCES TO START II LEVELS BY 2007

Savings
(Millions of dollars)
Budget
Authority Outlays

Annual

2000	570	90
2001	580	260
2002	1,560	590
2003	1,610	1,000
2004	950	1,370
2005	1,690	1,410
2006	1,920	1,480
2007	1,590	1,730
2008	1,130	1,700
2009	1,170	1,480

Cumulative

2000-2004	5,270	3,310
2000-2009	12,770	11,110

SPENDING CATEGORY:

Discretionary

RELATED OPTIONS:

050-01-B, 050-02, and 050-03

RELATED CBO PUBLICATION:

Letter to the Honorable Thomas A. Daschle regarding the estimated budgetary impacts of alternative levels of strategic forces,
March 18, 1998.

The second Strategic Arms Reduction Treaty (START II) will require the United States to cut its long-range nuclear forces to 3,500 warheads by 2003—roughly one-third of the 1990 level. START II was ratified by the Senate in 1996, but it faces an uncertain future in Russia's parliament, the Duma. Presidents Clinton and Yeltsin have agreed to delay full implementation of the treaty until December 31, 2007, in an effort to encourage ratification by the Duma. However, the forces to be dismantled by that date must be made inoperable by the end of 2003.

The Clinton Administration decided in 1994 to begin cutting its forces to START II levels to save money and to encourage Russian ratification of the treaty. But those plans were thwarted after several years of Russian inaction and Congressional directives prohibiting further cuts in U.S. forces. As a result, today's forces remain largely consistent with the START I treaty, and the Administration has decided to keep them at those levels until the Duma ratifies START II. Currently, the United States deploys 500 Minuteman III intercontinental ballistic missiles (ICBMs) with three warheads each, 50 Peacekeeper ICBMs with 10 warheads each, 18 Trident submarines (each carrying 192 warheads on 24 missiles), and 94 B-52H, 94 B-1B, and 21 B-2 bombers.

Once the Duma ratifies START II, the Administration plans to achieve the 3,500-warhead limit by eliminating all 50 Peacekeepers, four Trident submarines, and 23 B-52H bombers by the end of 2007. It will also reduce the number of warheads on Minuteman III missiles from three to one and on Trident D5 missiles from eight to five and will redesignate its B-1B bombers as conventional bombers.

This option would follow the Administration's plan to reduce U.S. forces to START II levels even if the Duma does not ratify the treaty. Those cuts would be made by the end of 2007, the treaty's modified implementation date. The primary motivation would be financial; those changes would save \$570 million in 2000 and nearly \$13 billion through 2009 relative to START I levels. Most of the savings would come from avoiding three substantial investments: buying D5 missiles, refueling the four oldest Trident submarines and converting them to carry D5s, and manufacturing more Peacekeeper missiles. (This option would not save any money relative to the Administration's plan since that plan already assumes the cuts.) Savings could be \$700 million higher through 2009 if the forces were retired by 2003, the original implementation date for START II.

Supporters of this approach argue that keeping long-range forces at today's levels is unnecessary. According to several reports, Russia will have trouble maintaining its forces at START I levels. Many of its missiles and submarines are nearing the end of their service life, and production of replacements has slowed to a trickle or stopped altogether. For that reason, several prominent former opponents of START II in the Duma have recently urged ratification. Some advocates of this option also argue that adopting it will encourage the Duma to ratify the treaty.

Critics argue that U.S. forces should remain at START I levels. They oppose any unilateral disarmament. They also worry that Russia might build up its nuclear forces if a hard-line government came to power. In their view, the Duma will only ratify the treaty if it is faced with a robust U.S. START I force.

050-01-B REDUCE NUCLEAR DELIVERY SYSTEMS WITHIN OVERALL LIMITS OF START II

	Savings (Millions of dollars)	
	Budget Authority	Outlays
Annual		
2000	1,250	190
2001	1,340	590
2002	2,500	1,260
2003	2,560	1,810
2004	2,010	2,260
2005	2,670	2,360
2006	2,400	2,500
2007	2,650	2,810
2008	1,720	2,690
2009	1,780	2,380
Cumulative		
2000-2004	9,660	6,110
2000-2009	20,880	18,850
SPENDING CATEGORY:		
Discretionary		
RELATED OPTIONS:		
050-01-A, 050-02, and 050-03		
RELATED CBO PUBLICATION:		
<i>Letter to the Honorable Thomas A. Daschle regarding the estimated budgetary impacts of alternative levels of strategic forces,</i> March 18, 1998.		

This option would go one step farther than the previous alternative (050-01-A). It would reduce the number of missiles and submarines below the levels planned by the Administration for START II but keep the number of warheads at START II levels. Specifically, it would retire four additional Trident submarines and 200 Minuteman III intercontinental ballistic missiles by 2003, retaining 10 Tridents and 300 Minuteman IIIs. To keep the same number of warheads, the smaller Trident force would carry seven warheads on each missile instead of five (see option 050-02). Minuteman III missiles would carry one warhead. This option would keep the same number of nuclear bombers as option 050-01-A, each carrying an average of 16 warheads. In all, those forces would carry nearly 3,500 warheads—almost the same number that the Administration proposes for START II.

Compared with keeping U.S. forces at START I levels, this option would save \$1.3 million in 2000 and \$20.9 billion through 2009. Most of those savings—which were outlined in option 050-01-A—would come from reducing forces to the START II levels planned by the Administration and thus do not represent savings from the Administration's budget plan. However, this option would save an additional \$680 million in 2000 and \$8.1 billion through 2009 compared with the Administration's plan; those extra savings would come from reduced operation and support costs (from retiring 200 Minuteman ICBMs and four additional Trident submarines) and lower levels of investment spending (from canceling production of the D5 missile after buying five in 1999, extending the service life of fewer Minuteman missiles, and forgoing the Administration's plans to reconfigure four Trident submarines under START II so they can carry new D5 missiles).

During the Cold War, this option might have raised concerns about stability. By putting more nuclear "eggs" in fewer baskets, the United States would have increased its vulnerability to a surprise attack. But today those concerns have become less acute. The United States may now decide that it can save money safely by deploying its warheads on fewer weapon systems. However, this option would retain three types of nuclear systems (the so-called nuclear triad) and thus provide a margin of security against an adversary's developing a new technology that would render other legs of the triad more vulnerable to attack.

This option has a number of potential disadvantages, including those raised in option 050-01-A about cutting forces below START I levels before Russia ratifies START II. Carrying more warheads on D5 missiles would reduce the targeting flexibility of U.S. planners, and deploying fewer submarines might increase their vulnerability to Russian antisubmarine forces. Unilaterally cutting forces would also limit the United States' ability to increase the number of warheads it deployed if Russia decided not to abide by START II. Indeed, some critics argue that unilateral cuts would reduce U.S. leverage to get Russia to ratify START II.

050-02 TERMINATE PRODUCTION OF D5 MISSILES AFTER 1999

Savings
(Millions of dollars)
Budget
Authority Outlays

Annual

2000	1,120	160
2001	1,120	520
2002	2,280	1,110
2003	2,350	1,620
2004	1,600	2,020
2005	1,640	1,970
2006	1,400	1,760
2007	1,330	1,610
2008	340	1,300
2009	350	940

Cumulative

2000-2004	8,470	5,430
2000-2009	13,530	13,010

SPENDING CATEGORY:

Discretionary

RELATED OPTIONS:

050-01-A and 050-01-B

RELATED CBO PUBLICATION:

Rethinking the Trident Force
(Study), July 1993.

Under the first Strategic Arms Reduction Treaty (START I), the Navy plans to deploy a force of 18 Trident submarines. Each one will carry 24 D5 missiles—the most accurate and powerful submarine-launched ballistic missile (SLBM) in the U.S. inventory. Today, the Navy has 10 Trident submarines armed with D5s and eight armed with older C4 missiles. To keep 18 submarines, it must convert the eight older subs to carry D5s as well. To arm that force, CBO estimates, the Navy will have to purchase a total of 540 D5 missiles, 360 of which it has already bought.

If Russia ratifies START II, the Administration plans to reduce the Navy's Trident submarines to 14 by 2007 to comply with that treaty. It will probably cut the number of warheads on each missile from eight to five (for a total of 1,680) to keep the number of U.S. warheads near the ceiling allowed by START II.

This option would terminate production of D5 missiles after 1999 and retire all eight C4 submarines by 2005. The Navy would then have 360 D5s—13 more than it says it needs to support a 10-submarine force. Like the Administration's plan for START II, this option would wait to retire the C4 submarines until after the turn of the century to encourage Russian compliance with START II and to give the United States flexibility to stay at higher START I levels if Russia does not comply. To retain 1,680 warheads, the option would increase the number of warheads on each D5 missile from five to seven.

Compared with keeping today's START I forces—as the Congress is requiring until Russia ratifies START II—this option would save \$1.1 billion in 2000 and \$13.5 billion through 2009. The savings would come from canceling missile production (\$8 billion), retiring all eight C4 submarines rather than upgrading them (\$3.3 billion), and operating fewer subs (\$2.2 billion). Compared with the plan assumed in the Administration's 1999 budget, which would retire only four C4 submarines, this option would save \$5 billion through 2009.

Terminating production of the D5 has several drawbacks. Loading more warheads on existing missiles would reduce their range by roughly 20 percent, limiting the areas in which submarines could operate. It would also reduce the flexibility of the force, since missiles with fewer warheads can cover more widely dispersed targets. Deploying D5 missiles with seven warheads would also constrain the United States' ability to expand its SLBM force by adding back the extra warheads if Russia violated or never ratified START II. In addition, reducing the fleet to 10 submarines could increase its vulnerability to attack by Russian antisubmarine forces.

Nevertheless, some people may consider the capability retained under this option sufficient to deter nuclear war. Although the missiles' range and the submarines' patrol areas would be smaller, they would still exceed the levels planned during the Cold War—when Russia had more antisubmarine forces and the United States intended to deploy the D5 with eight large warheads (W-88s). Moreover, less targeting flexibility might not reduce the nuclear deterrent: 1,680 warheads deployed on 336 missiles might not deter an adversary any more than if they were on the 240 missiles called for in this option. Also, the smaller likelihood of nuclear war and Russia's atrophying nuclear forces may have weakened the rationale for the United States to be able to increase its forces rapidly by adding warheads to the D5. In fact, since the U.S. ability to do that is one of Russia's biggest concerns about START II, adopting this option could make passage of the treaty more likely.

050-03 REMOVE PEACEKEEPER MISSILES AHEAD OF START II RATIFICATION

	Savings (Millions of dollars)	
	Budget	Outlays
	Authority	
Annual		
2000	0	0
2001	10	10
2002	60	50
2003	140	110
2004	400	220
2005	1,090	460
2006	940	680
2007	960	830
2008	980	930
2009	1,000	960
Cumulative		
2000-2004	610	390
2000-2009	5,580	4,250

SPENDING CATEGORY:

Discretionary

RELATED OPTIONS:

050-01-A and 050-01-B

The second Strategic Arms Reduction Treaty (START II) requires both Russia and the United States to eliminate land-based missile systems that carry the largest numbers of warheads apiece. Those systems include the Peacekeeper missile for the United States and the SS-18 for Russia—the so-called heavy intercontinental ballistic missiles (ICBMs). Many analysts consider START II's eradication of all ground-based missiles with multiple warheads a major accomplishment. They argue that those warheads—10 on each heavy ICBM—are inherently more vulnerable to attack than warheads mounted on submarine-launched missiles, and therefore their very existence is destabilizing.

Although START II was ratified by the U.S. Senate in January 1996, it is stalled in the Russian Duma. Duma watchers suggest various explanations for the delay, including protests against NATO expansion, worries about the final status of the Anti-Ballistic Missile Treaty, and the perception of inequalities in the START II treaty that favor the United States. Other analysts suggest that Russia's economic difficulties will result in unilateral reductions in the country's nuclear arsenal independent of any treaty.

The Administration has stated that it intends to continue deploying Peacekeeper until Russia ratifies START II. This option, by contrast, would eliminate those missiles by the end of 2003 regardless of the status of START II ratification. Maintaining the 50 deployed Peacekeepers costs a total of about \$200 million a year. However, this option would save approximately \$5.6 billion over a 10-year period compared with remaining at today's START I levels. A large part of those savings would come from not buying additional missiles for future flight tests. Compared with the Administration's plans for START II, which assume the elimination of Peacekeeper by 2007, savings from this option would total \$800 million.

Opponents of this option might argue that only the United States' determination to maintain its stockpiles at START I levels can ensure that Russia will ratify START II. Also, unilaterally eliminating Peacekeeper missiles would reduce the U.S. arsenal by 500 warheads—or 8 percent of the 6,000 deployed warheads allowed under START I. Moreover, since the warheads on Peacekeeper are some of the most accurately and quickly delivered ones in the U.S. arsenal, their deterrent value may be greater than that percentage indicates.

Conversely, unilateral elimination of Peacekeeper might have a significant influence on the Russian Duma in ratifying START II. Russia's perception of the threat posed by Peacekeeper is probably greatly increased by the country's lack of reliable early-warning information. Thus, getting rid of Peacekeeper could produce a disproportionate increase in Russia's sense of security. For precedent, proponents could cite President Bush's unilateral withdrawal of substantial numbers of U.S. tactical nuclear weapons in 1991. Within days of that event, Secretary Gorbachev made a similar pledge to remove large numbers of Soviet tactical weapons.

050-04 REDUCE THE SCOPE OF DOE'S STOCKPILE STEWARDSHIP PROGRAM

Savings (Millions of dollars)		
	Budget Authority	Outlays
Annual		
2000	100	60
2001	150	120
2002	220	190
2003	290	260
2004	360	320
2005	370	360
2006	380	370
2007	390	380
2008	400	390
2009	410	400
Cumulative		
2000-2004	1,120	950
2000-2009	3,070	2,850

SPENDING CATEGORY:

Discretionary

RELATED OPTION:

050-05

RELATED CBO PUBLICATION:

Preserving the Nuclear Weapons Stockpile Under a Comprehensive Test Ban (Paper), May 1997.

The Department of Energy (DOE) has developed the Stockpile Stewardship Program to preserve the long-term reliability and safety of U.S. nuclear weapons without testing them by exploding them underground. To carry out the program, DOE plans to continue operating both of its weapons-design laboratories (Los Alamos and Lawrence Livermore) and its engineering lab (Sandia). It will also construct several new facilities to provide data on the reliability and safety of nuclear weapons as they age. In addition, DOE will conduct "zero-yield" tests at the Nevada Test Site so it can keep enough skilled technicians there to be able to resume testing nuclear weapons by exploding them underground if the United States decides that doing so is in the national interest—a capability that the President has ordered DOE to retain.

DOE plans to spend an average of \$2.6 billion a year over the next 10 years on what has historically been known as weapons research, development, and testing. Adjusted for inflation, that amount exceeds spending in 1980, when the United States was maintaining an arsenal of some 25,000 warheads and designing and building new ones. To some observers, a budget of that size today is excessive and unnecessary.

This option would reduce the scope of the stewardship program by consolidating the two design laboratories and halting all testing activities at the Nevada Test Site. However, it would preserve the other elements of the stewardship program, including the Dual-Axis Radiographic Hydrotest (DARHT) facility at Los Alamos and the National Ignition Facility (NIF) at Lawrence Livermore. Taken together, the changes in this option would reduce employment by about 2,000 people. They would also save \$100 million in 2000 and almost \$3.1 billion through 2009 compared with the Administration's 1999 budget.

Those savings assume that weapons-design activities would be consolidated over five years at Los Alamos, which developed most of the weapons that are likely to remain in the stockpile. Lawrence Livermore's primary focus would become other scientific research. To ensure that the warheads it developed could be reliably maintained, some designers from Lawrence Livermore would be relocated to Los Alamos. However, a cadre of weapons scientists would remain at Livermore to act as an independent review team for Los Alamos's efforts. To provide them with challenging work, Livermore would keep large computational facilities for modeling the complex processes inside nuclear weapons and would build NIF as currently planned. (Alternatively, stewardship activities could be consolidated at Lawrence Livermore, but the savings would be lower.)

To some people, this option would cut the planned stewardship program too deeply. They believe that the program is the minimum effort necessary to maintain the nuclear stockpile without underground testing. In their view, scientists will need new facilities to obtain data on reliability that were formerly provided directly by such testing. They also contend that consolidation would reduce competition and peer review, result in the loss of some facilities

that could not easily be transferred, and eliminate Lawrence Livermore's central unifying mission (and thus its motivation for excellence). For those reasons, the President has directed DOE to retain both labs. Closing the Nevada Test Site would increase the time needed to resume underground testing if Russia started a new arms race or the United States discovered a serious problem with its stockpile that could only be corrected by testing. Closing the test site would also stop scientists from conducting "subcritical" experiments to learn more about how aging affects the plutonium components in nuclear weapons.

To other people, this option would not cut deeply enough. In their view, keeping part of a second lab and building DARHT and the \$1.2 billion NIF are unnecessary to support the nuclear stockpile. Furthermore, they claim, those facilities might allow DOE scientists to continue designing and testing weapons and circumvent the test ban. Even if DOE has no such intentions, the perception of such a capability could make it difficult to

convince countries such as India, which are critical of the United States' plans to preserve its nuclear weapons under a test ban, that the United States has really given up designing new weapons. Critics also argue that NIF should be funded outside the nuclear weapons program if it can help scientists understand how to harness fusion for civilian energy, as supporters claim.

Finally, some analysts are fundamentally opposed to a U.S. moratorium on testing (which will become permanent if the United States ratifies the Comprehensive Test Ban Treaty). They contend that the only way to ensure the reliability of U.S. nuclear weapons is to explode those weapons underground. They also worry that by halting the development and testing of new types of weapons, the United States will lose the skilled people necessary to preserve the stockpile. This option does not address the test ban directly, but the cuts it would make to the laboratories would probably be resisted by test-ban opponents.

050-05 CANCEL DEVELOPMENT OF THE TRITIUM PRODUCTION ACCELERATOR

Savings
(Millions of dollars)
Budget
Authority Outlays

	Annual	
2000	240	150
2001	220	200
2002	130	170
2003	30	80
2004	0	20
2005	0	0
2006	0	0
2007	0	0
2008	0	0
2009	0	0
	Cumulative	
2000-2004	620	620
2000-2009	620	620

SPENDING CATEGORY:

Discretionary

RELATED OPTION:

050-04

RELATED CBO PUBLICATIONS:

Estimated Budgetary Effects of Alternatives for Producing Tritium (Letter), August 27, 1998.

Preserving the Nuclear Weapons Stockpile Under a Comprehensive Test Ban (Paper), May 1997.

Tritium gas is an essential ingredient for nuclear weapons. Because the gas, which is a radioactive isotope of hydrogen, decays at a rate of 5.5 percent a year, the Department of Energy (DOE) must replenish the tritium in U.S. nuclear weapons every several years. That means the department must have access to a reliable supply of the gas.

The United States has not produced tritium since 1988, when it shut down its last production reactor for safety reasons. Since then, cuts in the size of the U.S. nuclear arsenal have allowed DOE to recycle tritium from weapons that are being dismantled. However, if the United States keeps its arsenal at the levels specified in the first Strategic Arms Reduction Treaty (START I)—which is its current policy—it will need new tritium after 2005.

For the past several years, DOE has examined several alternatives for producing tritium, including building a new production accelerator or using commercial nuclear reactors owned by utility companies. Recently, it decided in favor of the second approach, using one or more existing reactors operated by the Tennessee Valley Authority. But to ensure that the United States will have a backup source of tritium if that approach experiences difficulties, DOE will continue to design and develop an accelerator, stopping short of actual construction.

This option would cancel DOE's efforts to develop the tritium production accelerator as a backup source and instead rely entirely on reactors for the nation's tritium needs. Doing that would save \$240 million in 2000 and about \$620 million through 2009 compared with DOE's most recently released estimate of the cost to develop the accelerator as a backup.

Advocates of canceling the accelerator point out that the technology for producing tritium in nuclear reactors has been well proved over decades. They contend that the United States should not continue to fund a technology that has yet to be proved at full scale and is several times more expensive than the reactor approach. In addition, using commercial reactors allows DOE to produce only as much tritium as it needs, when it needs it, without having to invest in costly infrastructure.

Canceling further work on the accelerator, however, would eliminate the nation's backup source for tritium. DOE says doing that would be premature until it is certain that all regulatory and political hurdles to using commercial reactors can be addressed. For example, the United States and other proponents of the Nuclear Non-Proliferation Treaty have for decades encouraged other countries to avoid using commercial reactors for nuclear weapons purposes. A study by DOE argues that the proliferation issues raised by using a commercial reactor are "manageable," but many people in the nonproliferation community disagree. Besides avoiding that sensitive issue, the accelerator has several other advantages. It offers the potential for producing new types of medical isotopes and for converting nuclear waste to less radioactive forms that are more easily stored and handled. That potential can only be gauged through further research.

050-06 REDUCE PROCUREMENT OF THE VIRGINIA CLASS NEW ATTACK SUBMARINE

	Savings (Millions of dollars)	
	Budget Authority	Outlays
Annual		
2000	0	0
2001	0	0
2002	220	10
2003	360	80
2004	610	170
2005	1,850	390
2006	2,050	820
2007	2,300	1,250
2008	2,540	1,680
2009	2,000	1,930
Cumulative		
2000-2004	1,190	260
2000-2009	11,930	6,330
SPENDING CATEGORY:		
Discretionary		

As a result of the Quadrennial Defense Review, the Navy is reducing its force of attack submarines from 80 in 1996 to 50 by 2003. To meet that ambitious schedule, the Navy is decommissioning some of its Los Angeles class (SSN-688) submarines before they reach the end of their 30-year service life. Even as it is discarding older subs, though, the Navy is building newer ones. It ordered three Seawolf class submarines in the late 1980s and 1990s and is procuring the Virginia class New Attack Submarine (NSSN) to be their lower-cost successor. The reason for the additions is that the Joint Chiefs of Staff believe that the Navy will need 10 to 12 very quiet submarines by 2012 to compete with Russia's newest subs, which have become quieter, making them harder to locate and track.

The Virginia class submarine is designed to be as quiet as the Seawolf but will be smaller and slower, carry fewer weapons, and not be able to dive as deep. Although the Seawolf was designed primarily to counter the more severe threat posed by Russian submarines in the open ocean, the Virginia is being developed to operate in coastal waters close to potential regional foes.

The Navy ordered the third and last Seawolf in 1996 and the first Virginia in 1998. It plans to buy one Virginia class submarine in 1999, none in 2000, one each in 2001 and 2002, none in 2003, and one each in 2004 and 2005. Beginning in 2006, the Navy will purchase two or three subs per year. Under that plan, 14 Virginia class submarines would be authorized between 2000 and 2009. (The President's 2000 budget would add the purchase of one sub in 2003.)

This option would save money by keeping the Los Angeles class submarines in service until the end of their normal 30-year life and slowing procurement of the Virginia class. To help maintain the industrial base for building subs and to modernize the fleet, the option would produce a Virginia in 2001 and 2002 as now planned, skip 2003, and then build one per year from 2004 to 2009. At that pace, eight Virginia class subs would be authorized between 2000 and 2009.

Producing the Virginia at low annual rates would save a total of almost \$12 billion over the next 10 years. Most of those savings would occur after 2004, when the submarines would be produced at a lower rate. (The savings shown through 2004 reflect fewer long-lead items that would be purchased in those years.) A lower production rate, however, would increase the cost of each submarine by roughly \$200 million for the eight authorized between 2000 and 2009.

During the Congressional debate on producing the third Seawolf, the Navy emphasized that although Russia is financially strapped and therefore cannot operate its nuclear submarine fleet up to potential, it is still investing money to buy new, very quiet attack submarines at low rates. The Seawolf and the Virginia would both be quiet enough to meet the Joint Chiefs' goal of competing with those new Russian subs. Procuring a total of 10 Virginias in addition to the three Seawolfs would enable the Navy to field a force of 13 very quiet submarines by 2012, meeting the Joint Chiefs' requirement.

050-07 **REDUCE THE NUMBER OF AIRCRAFT CARRIERS AND AIR WINGS TO 10**

Savings
(Millions of dollars)
Budget
Authority Outlays

Annual

2000	1,310	480
2001	4,420	1,330
2002	1,140	2,110
2003	1,170	2,090
2004	1,200	1,970

2005	2,170	1,520
2006	5,590	1,910
2007	1,310	2,780
2008	1,350	2,670
2009	1,420	2,390

Cumulative

2000-2004	9,240	7,980
2000-2009	21,080	19,250

SPENDING CATEGORY:

Discretionary

RELATED OPTIONS:

050-08 and 050-09

RELATED CBO PUBLICATION:

*Improving the Efficiency of
Forward Presence by Aircraft
Carriers* (Paper), August 1996.

The aircraft carrier is the centerpiece of the U.S. Navy. The Administration's defense plans call for a fleet of 12 carriers—11 active ships plus one, manned partly by reserves, that can also be used for training. Those ships will require a total of 10 active and one reserve air wings to provide combat capability. They will also be accompanied by a mix of surface combat ships (usually cruisers and destroyers) and submarines to attack planes, ships, and subs that threaten the carriers. The surface combatants and submarines can also attack targets on land.

In the aftermath of the Cold War, some policymakers have argued that the United States does not need a force of 12 carriers. The total capability of U.S. tactical aircraft in the Navy and Air Force will substantially exceed that of any regional power that seems potentially hostile. Moreover, the capabilities of U.S. ships are unsurpassed worldwide.

This option would immediately retire one conventionally powered aircraft carrier and one nuclear-powered carrier. By the end of 2000, the Navy would have 10 carriers (nine active ships and one partial reserve carrier for training purposes). In addition, this option would eliminate one active air wing, leaving nine active and one reserve wings to match the number of carriers.

Compared with the Administration's planned forces, those cuts could save \$1.3 billion in 2000 and \$21 billion over the next 10 years. Of that amount, \$9 billion would result from not buying new carriers in 2001 and 2006, as now planned. The remaining savings of \$12 billion would come from reduced operating costs associated with retiring two carriers and an air wing. Those estimates include the cost of decommissioning the retiring ships—roughly \$100 million apiece. (Reducing the number of carriers could also lower the number of surface combatants, submarines, and aircraft that the Navy would need to accompany them. Thus, the Navy might save additional money on procurement and operations by not having to purchase and operate as many other new ships and aircraft. Conversely, the Navy might need those ships to perform other missions, such as forward presence, once it had fewer carriers.)

Although reducing the force to 10 carriers might not impair the United States' ability to fight and win two regional wars (according to one analysis by the Department of Defense), having fewer ships would limit the Navy's ability to keep three carriers deployed overseas most of the time. That could substantially increase the strain put on the carrier force as long as policymakers continued to use aircraft carriers to respond to crises or to provide U.S. presence overseas as extensively as they have in recent years. With fewer ships available, the time that those ships spent at sea could increase. The high-quality sailors the Navy needs would therefore spend more time away from their homes and families, perhaps making them less inclined to stay in the service.

The Navy might be able to maintain more overseas presence with carriers by bringing new crews to the ships while they were at their foreign posts rather than waiting for them to return home. (The Navy does that with some mine-sweepers.) In addition, the Navy could use ships other than carriers (such as large flat-deck amphibious vessels or Aegis cruisers) to help maintain U.S. presence overseas.

050-08 REDUCE PROCUREMENT OF DDG-51 DESTROYERS

Savings (Millions of dollars)		
	Budget Authority	Outlays
<hr/>		
Annual		
2000	810	40
2001	820	250
2002	840	440
2003	1,060	640
2004	0	700
2005	0	530
2006	20	390
2007	70	240
2008	120	230
2009	170	230
Cumulative		
2000-2004	3,530	2,070
2000-2009	3,910	3,690
<hr/>		
SPENDING CATEGORY:		
Discretionary		
RELATED OPTION:		
050-07		

The DDG-51 destroyers of the Arleigh Burke class would be used in a war to protect aircraft carrier battle groups and to attack land- and sea-based targets. The ships incorporate the Aegis combat system, which is designed to stop attacks on a battle group by large numbers of enemy aircraft with antiship missiles, and the Tomahawk missile, which would attack targets on land. Compared with previous classes of destroyers, the DDG-51 incorporates other improvements in speed, weapons, armor, and (to some degree) stealth.

The Administration plans to buy 12 more DDG-51s from 2000 through 2003—at a rate of three per year—before the program ends. Under this option, by contrast, only eight DDG-51s would be bought from 2000 through 2003, at a rate of two per year. Purchasing four fewer ships during that period could save \$810 million in budget authority in 2000 and \$3.9 billion over 10 years—about \$3.6 billion in procurement costs and \$300 million in operating costs.

Reducing the number of DDG-51s by four would still leave the Navy with a highly capable force of surface combatants to counter regional threats. With the 80 Aegis ships that would eventually be available under this option (27 CG-47 Ticonderoga class cruisers, the 45 DDG-51s funded through 1999, and eight future DDG-51s), two could be assigned as escorts to each of the 12 aircraft carrier battle groups, leaving 56 available for independent operations. The Navy would also have large numbers of DD-963 Spruance class destroyers and FFG-7 Oliver Perry class frigates for additional antisurface, antisubmarine, and land-attack missions.

Some analysts argue, however, that the DDG-51 is not optimally designed to fight in coastal areas. In their view, investing in a new class of ship that is better suited for coastal warfare could make more sense than continuing to buy ships designed to fight and defeat the Soviet navy. The Navy is designing such a new ship: the DD-21 land-attack destroyer. It is intended to be highly stealthy, operate relatively close to the shore, and be armed with large numbers of land-attack and antisubmarine weapons.

The Navy expects to order the first DD-21 in 2004. The Congress could end the DDG-51 destroyer program now instead of reducing procurement rates until then, as this option envisions, but the industrial base for surface combatants could suffer. The two shipyards that build destroyers would probably have to reduce their workforce, losing the know-how specific to producing those ships. Rebuilding that workforce or subsidizing it until the DD-21 was ready for production could prove expensive, especially if the new ship encountered delays in the design stage.

Nevertheless, reducing the number of DDG-51s could have some disadvantages as well. It would give the Navy fewer ships that can perform multiple missions such as strike and antiair, antisurface, and antisubmarine warfare. (The DD-21 will not have the Aegis antiair combat system.) In addition, although the U.S. Navy is less likely now to confront an opponent (like the Soviet Union) capable of launching saturation attacks against it, combat with regional powers is likely to bring its ships into coastal areas, where they have less time to react to threats. In that situation, the Navy could benefit from the quicker reaction of the Aegis system.

050-09 REDUCE PURCHASES OF THE NAVY'S F/A-18E/F

	Savings (Millions of dollars)	
	Budget	Outlays
	Authority	
<hr/>		
	Annual	
2000	874	165
2001	673	389
2002	595	596
2003	489	597
2004	489	552
2005	398	496
2006	302	433
2007	246	358
2008	261	300
2009	864	384
	Cumulative	
2000-2004	3,120	2,300
2000-2009	5,190	4,272
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SPENDING CATEGORY:

Discretionary

RELATED OPTIONS:

050-07, 050-10, and 050-12

RELATED CBO PUBLICATIONS:

A Look at Tomorrow's Tactical Air Forces (Study), January 1997.

Letter to the Honorable Curt Weldon regarding the estimated cost of three tactical aircraft programs to reflect changes resulting from the 1997 Quadrennial Defense Review, July 1998.

The F/A-18 is the workhorse of the Navy's fleet of carrier-based fighter aircraft. It has operated from the decks of aircraft carriers since the early 1980s and now makes up almost three-quarters of the fighters in the Navy's air wings. The Marine Corps also uses F/A-18s to provide fighter cover for its expeditionary forces. The earliest model of the aircraft, the F/A-18A/B, has been gradually replaced with the F/A-18C/D. The last eight C/D models were ordered in 1998; those planes will keep the C/D production line open at least through 2000. Potential foreign sales might keep that model in production after 2000, but no contracts have been signed.

In 1991, the Navy announced plans to develop an E/F variant of the F/A-18, which it began purchasing in 1997. Over the next 10 years, the Navy intends to replace all of its C/D models with E/Fs, for a total purchase of 548 E/F models.

The E/F features several modifications: a longer fuselage, larger wings, and more powerful engines than the C/D. Those changes should enable the E/F to carry a larger load of weapons, or carry a combat load about 40 percent farther, while retaining most of the speed and maneuverability of the earlier version. According to Boeing, the plane's manufacturer, the E/F also has a smaller "signature" than its predecessor, which should make it less visible to enemy sensors.

With that greater capability comes greater cost. By the Congressional Budget Office's estimate, the E/F version will be 69 percent more expensive than the C/D model. That higher cost will contribute to the problems that the Department of Defense (DoD) is expected to have affording its long-term plans for tactical aircraft: in addition to buying F/A-18E/Fs for the Navy, the department plans to purchase sophisticated and costly F-22 fighters for the Air Force and large numbers of Joint Strike Fighters for both of those services as well as the Marine Corps. Buying those three types of aircraft would push the share of service budgets spent on fighters well above past levels.

The Navy could save money by purchasing fewer E/F models and filling out its fleet requirements with F/A-18C/Ds. The resulting, less capable force might be acceptable since the fighter fleets that potentially hostile countries can field for the foreseeable future will have limited capabilities.

If the Navy bought no more than 154 F/A-18E/Fs (92 aircraft between 2000 and 2009), it could replace a small part of its fleet with those and replace the rest with C/Ds. That option would save almost \$5.2 billion over the next 10 years. Although such savings would make DoD's plans for fighter aircraft more affordable, losing the increased range and other improvements of the F/A-18E/F could be an unacceptable price. The United States relies solely on carrier-based aircraft for some of its missions. And the Navy may need planes with long ranges that can survive in hostile environments for a regional conflict.

050-10 DEFER PURCHASES OF THE MARINE CORPS'S V-22 AIRCRAFT

	Savings (Millions of dollars)	
	Budget	Outlays
	Authority	
Annual		
2000	0	0
2001	0	0
2002	0	0
2003	0	0
2004	26	5
2005	637	137
2006	548	310
2007	554	483
2008	586	535
2009	601	560
Cumulative		
2000-2004	26	5
2000-2009	2,952	2,030
SPENDING CATEGORY:		
Discretionary		
RELATED OPTION:		
050-09		
RELATED CBO PUBLICATION:		
Moving the Marine Corps by Sea in the 1990s (Study), October 1989.		

The V-22 aircraft, which entered production in 1997, will help the Marine Corps perform its amphibious assault mission (seizing a beachhead in hostile territory) and its subsequent operations ashore. The plane's tilt-rotor technology enables it to take off and land vertically like a helicopter and, by tilting its rotor assemblies into a horizontal position, to become a propeller-driven airplane when in forward flight. As a result, the V-22 will be able to fly faster than conventional helicopters. The Marine Corps argues that the plane's increased speed and other design features will make it less vulnerable when flying over enemy terrain and will provide over-the-horizon amphibious assault capability.

Despite all of those advantages, the Bush Administration tried to cancel the V-22, largely because of its price tag. Each aircraft bought for the Marine Corps is expected to have a procurement unit cost of \$62 million, on average—considerably more than most conventional helicopters. Notwithstanding that cost, the Congress has continued to fund the V-22, and the Marine Corps plans to buy a total of 360 planes. (The Air Force may eventually buy 50 V-22s for its special-operations forces, and the Navy plans to buy 48 for combat search-and-rescue missions and for logistics support of its fleet.)

The Marine Corps expects, however, to acquire several other planes at the same time. During many of the years that it is purchasing V-22s, the service also plans to buy large numbers of Joint Strike Fighters (JSFs) to replace its short-range bomber, the AV-8B, and its F/A-18 fighter attack aircraft. JSFs are expected to be relatively inexpensive as tactical fighters go—costing perhaps 60 percent of the price of the Air Force's sophisticated F-22. But when bought in quantity and combined with the cost of the V-22, their purchase would bring peak annual spending on the V-22 and JSF to almost \$6 billion—nearly five times the amount requested for Marine Corps combat aircraft in this year's budget. If the Marine Corps cannot increase funding for those aircraft, it may have to modernize either its fighter fleet, its airborne amphibious assault fleet, or both more slowly.

This option would halve the Marine Corps's annual procurement of V-22s during the 2004-2009 period, when both V-22s and JSFs would be bought. As a result, the service's average funding requirements during those years would decrease to a little over \$5 billion. That sum may be more manageable than the Marine Corps's current plan and would save almost \$3 billion over 10 years.

Deferring purchases of V-22s would have some drawbacks, however. The current amphibious assault fleet is made up of CH-46 and CH-53 helicopters that are more than 30 years old, on average. The CH-46s would remain in the fleet until their average age approached 50 if the V-22s deferred under this option were bought beginning in 2013, when V-22 purchases decrease sharply under current plans. (If the Marines had to engage in an extensive modification effort to retain those helicopters longer, the savings shown at left would be lower.) Plus, the amphibious assault fleet provides more unique services than the Corps's fighter attack fleet. The Marines can probably count on the Navy's carrier-based F/A-18 aircraft to provide them with additional firepower, but they cannot get aerial amphibious assault assets anywhere else. Also, cutting V-22 purchases might decrease the Corps's ability to perform humanitarian missions and other peacekeeping activities, which have grown more common in recent years.

050-11 REDUCE AIR FORCE TACTICAL FORCES

	Savings (Millions of dollars)	
	Budget Authority	Outlays
Annual		
2000	305	242
2001	629	543
2002	649	615
2003	669	648
2004	690	674
2005	712	698
2006	734	721
2007	757	744
2008	780	767
2009	805	791
Cumulative		
2000-2004	2,942	2,722
2000-2009	6,730	6,442
SPENDING CATEGORY:		
Discretionary		
RELATED OPTION:		
050-12		
RELATED CBO PUBLICATION:		
<i>A Look at Tomorrow's Tactical Air Forces</i> (Study), January 1997.		

Today's Air Force includes about 20 tactical air wings—roughly 13 on active duty and seven in the part-time reserves. (An Air Force tactical air wing traditionally consists of 72 combat planes, plus another 28 for training and maintenance purposes.) Substantial disagreement exists about whether all of those air wings are necessary, since U.S. tactical aircraft enjoy overwhelming superiority compared with the forces of any regional power that appears potentially hostile to the United States.

This option would reduce the Air Force's tactical fighter forces to 18 air wings by the end of 2000. That pace of reductions should be feasible inasmuch as the Air Force has cut the size of its fleet quickly in the past: it eliminated six air wings between 1990 and 1992 and another six by the end of 1996. Reducing the number of Air Force wings from 20 to 18 would lower the service's operating costs by \$305 million in 2000 and \$6.7 billion through 2009.

Further savings might be possible if the Air Force accompanied the force reduction with a reorganization that increased the number of planes per squadron and eliminated more squadrons. That practice (known as "robusting") allocates resources more efficiently, since each squadron or wing has high fixed costs. Increasing all Air Force squadrons to 24 planes could add significantly to the savings shown at left, though only if the Department of Defense (DoD) restructured units and bases to reduce overhead costs.

A reduction to 18 Air Force wings might leave the United States with an acceptable number of capable fighters. Even in terms of simple numbers, U.S. fighter inventories exceed those of any potential regional aggressor. Also, U.S. aircraft are more sophisticated than those of potential enemies.

However, retaining only 18 wings in the Air Force would not meet the military's current estimate of its requirements. Today's force planning assumes that the United States needs to be able to fight virtually simultaneous wars in two regions of the world—one in the Middle East and another, perhaps, in Asia. Winning two nearly simultaneous regional conflicts would require a minimum of 20 air wings, DoD has suggested.

Some analysts would also argue that additional cuts in Air Force wings ignore a major lesson from the Persian Gulf War: that aerial bombardment by tactical aircraft can be very effective and may greatly accelerate the end of a war, thus reducing loss of life among U.S. ground troops. A sizable inventory of tactical aircraft—perhaps more than would be maintained under this option—might therefore be a wise investment.

050-12 REDUCE PURCHASES OF THE AIR FORCE'S F-22

	Savings (Millions of dollars)	
	Budget Authority	Outlays
Annual		
2000	113	11
2001	268	62
2002	440	161
2003	2,009	427
2004	2,082	1,019
2005	2,129	1,542
2006	2,104	1,819
2007	2,554	2,021
2008	4,784	2,438
2009	4,034	3,254
Cumulative		
2000-2004	4,912	1,680
2000-2009	20,516	12,754

SPENDING CATEGORY:

Discretionary

RELATED OPTIONS:

050-09, 050-11, and 050-14

RELATED CBO PUBLICATION:

*A Look at Tomorrow's Tactical
Air Forces* (Study), January 1997.

The F-22 is being developed as the Air Force's next premier fighter aircraft. It is scheduled to enter the fleet in about seven years and will replace the F-15. The Air Force wants the F-22 to cruise at supersonic speeds as well as to be stealthy (that is, more difficult for enemy sensors to detect). F-22s will also have highly effective avionics that could make them more capable than other fighters in many types of combat.

However, the F-22 has experienced repeated delays, reductions in quantity, and increases in price over its almost 20-year development. Early in the program, the Air Force expected the plane to begin entering its fleet in 1995. But on the basis of current plans, the aircraft will not be fielded before 2006. Likewise, in early program plans the Air Force expected to buy more than 700 F-22s. After a series of cuts, the latest plan would buy only 339 aircraft—enough for about three air wings. That reduction occurred in part because the Air Force cut its number of tactical air wings, but cost increases played a role as well. Such cuts have increased the unit cost of the F-22. In an early study of the affordability of its plans, the Air Force estimated that each F-22 would cost about \$75 million (in 2000 dollars). Now the service may well pay almost \$125 million apiece (in 2000 dollars) for the plane, even if it makes no further cuts to planned purchases.

Despite all of those problems, the F-22 is the only tactical fighter program to survive from the Cold War period. The other two fighters that the Department of Defense has on its plate—the Joint Strike Fighter and the Navy's F/A-18E/F—entered development after 1990. That fact, combined with the F-22's complex design, has led some people to suggest that the F-22 is a legacy of the Cold War—a plane designed to fight hordes of sophisticated Soviet fighters rather than the modest regional fighter forces it is more likely to encounter today. As a result, they recommend canceling the F-22, or at least making further reductions to planned procurement.

This option would follow in the Air Force's footsteps and decrease the quantity procured, in this case by 219 planes. As a result, a total of 120 F-22s would be bought under this option, enough to let the Air Force field an air wing of the sophisticated fighters. The option assumes that the 219-plane cut would be evenly distributed over the F-22's purchase period. Cutting those planes would save \$113 million in budget authority in 2000 and about \$21 billion over the 2000-2009 period.

Such a "silver-bullet" purchase could still provide enough F-22s to perform those missions for which the service might need the plane's level of stealth and other performance advantages over existing Air Force aircraft. It might also permit the manufacturer and the Air Force to learn how to build and operate a plane as complex as the F-22. But it would make the Air Force's fighter fleets, which are already aging under current plans, even older. Buying 219 F-15s to replace the cut in F-22 purchases would remedy that problem, however. Although the F-15 is much less capable than the F-22, it is far more capable than the fighters of almost any of the United States' regional adversaries. A one-for-one offset of F-15s for F-22s would lower the total savings from this option to \$9 billion.

050-13 CREATE COMMON NATO AIRLIFT AND CUT U.S. C-17 COSTS

	Savings (Millions of dollars)	
	Budget	Outlays
	Authority	
	Annual	
2000	0	0
2001	0	0
2002	1,879	180
2003	909	697
2004	380	934
2005	286	786
2006	215	586
2007	190	403
2008	196	316
2009	203	248
	Cumulative	
2000-2004	3,168	1,811
2000-2009	4,258	4,150
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<u>SPENDING CATEGORY:</u>		
Discretionary		
 <u>RELATED OPTION:</u>		
050-14		
 <u>RELATED CBO PUBLICATIONS:</u>		
<i>Moving U.S. Forces: Options for Strategic Mobility</i> (Study), February 1997.		
 <i>Assessing Future Trends in the Defense Burdens of Western Nations</i> (Paper), April 1993.		

The C-17 Globemaster III is a four-engine transport aircraft that can carry at least 110,000 pounds of cargo for 3,200 nautical miles without aerial refueling. Because it is designed to land at small airfields with short runways, the C-17 could help meet transport needs within a theater of combat as well as over long distances. The current plan for transporting U.S. forces to regional conflicts calls for a fleet of 120 C-17s. At the same time, seven of the United States' European allies in the North Atlantic Treaty Organization (NATO) are planning to buy a total of 289 transport aircraft to carry reaction forces to crisis spots outside the territory of NATO members, in accordance with NATO's Strategic Concept.

This option would create a common NATO airlift fleet of 20 C-17s (similar to the common NATO AWACS fleet based in Germany, for which the United States pays 41.5 percent of operating and modernization costs). Twenty C-17s that the Air Force plans to buy in 2002 and 2003 would be transferred to NATO, which would reimburse the Air Force for them by the beginning of each year in order to comply with full-funding requirements. The average cost of those planes is about \$200 million apiece.

A common NATO airlift fleet would enable the allies to deploy forces to a crisis zone, while allowing the United States to draw on those assets for non-NATO missions under the Combined Joint Task Force (CJTF) concept approved in 1996. That concept allows NATO members—with consensus from the alliance—to use NATO assets for missions other than defense of a member state.

Assuming that the United States paid 41.5 percent of the cost of the NATO airlift fleet, this option would achieve net savings for the country of \$3.2 billion over five years and \$4.3 billion over 10 years, including net savings of \$200 million per year in operation and support costs once all 20 aircraft were delivered. It also would give the European allies faster access to strategic airlift than would otherwise be the case.

This option would face two main obstacles, however. The first is the European countries' desire to protect their defense industries by building their own strategic transport plane. The seven countries involved have committed to a joint program to develop the Future Large Aircraft (FLA), to be produced by the Airbus consortium. That plane would carry less cargo than the C-17 and be cheaper (at \$75 million apiece). Alternatively, the Europeans could consider buying Airbus commercial aircraft, although such planes are more difficult to load and unload, cannot carry very large cargo, and cannot land on some shorter or unpaved runways. Enthusiasm for developing the FLA is waning, however. In an indication that they will consider alternatives, Britain, France, Spain, and Belgium have all solicited bids from U.S. firms for a total of 143 aircraft, and Britain intends to lease four C-17s or their equivalent.

The second obstacle involves the political ramifications of relying on NATO to provide part of the U.S. Air Force's lift capability. The CJTF concept, designed to let European coalitions act without U.S. involvement, is new and evolving. Conceivably, if a NATO member opposed a mission (such as France opposing military action against Iraq), it might be able to veto U.S. use of NATO assets. Some Members of Congress might find that saving money would not outweigh the risk of diminishing the U.S. ability to act unilaterally if necessary.

050-14 DEFER PROCUREMENT OF TACTICAL AIRLIFT

	Savings (Millions of dollars)	
	Budget Authority	Outlays
Annual		
2000	195	19
2001	199	82
2002	138	134
2003	143	143
2004	0	130
2005	0	84
2006	0	43
2007	0	22
2008	0	8
2009	0	4
Cumulative		
2000-2004	675	508
2000-2009	675	669
SPENDING CATEGORY:		
Discretionary		
RELATED OPTIONS:		
050-12 and 050-13		

The C-130 Hercules is an airlift plane that the Air Force uses to transport cargo and supplies within a theater of operations. The C-130 is much smaller than strategic airlifters like the C-17 or C-5, which can carry about three times more weight over much longer distances, and it cannot carry the largest types of equipment. Still, the C-130 remains the critical element of the Air Force's tactical airlift fleet, with 236 E models (some dating back to the early 1960s) and 286 newer H models in service.

To produce the version that the Air Force is now buying, the J model, Lockheed Martin took the basic airframe of the C-130 and upgraded some of the plane's systems. For example, the C-130J includes a new engine that is more powerful and fuel efficient and an integrated avionics system that eliminates the need for a flight engineer. The Air Force plans to replace the least reliable 150 of its current C-130s with J models and modernize the rest through the so-called C-130X program. That modernization would standardize the C-130 fleet by installing a common cockpit and would upgrade avionics, including a navigational system required by international air traffic management accords.

For 1999, the Congress continued a pattern of authorizing a larger purchase of C-130s than the Administration requested—three J models rather than the one that the Air Force asked for. The Air Force has not adjusted its plans to reflect those additional aircraft. Its plans call for no C-130Js in 2000 and 2001, two each in 2002 and 2003, eight in 2004, and 10 in 2005.

This option would postpone procurement of C-130Js until 2004. Compared with the recent history of Congressional appropriations for the aircraft, that postponement would save a total of \$675 million in budget authority, resulting in outlay savings of \$508 million over five years and \$669 million over 10 years.

The C-130J is now being produced for foreign sales, but Lockheed is close to completing those orders. The President's 2000 budget does not call for any C-130J purchases by the Air Force in 2000 or 2001, despite reports that large-scale procurement might be accelerated from 2004 to 2000 to avoid possible costs from shutting down and reopening the production line. The Air Force says a temporary shutdown of C-130J production would also affect the cost of the F-22 fighter, which is built at the same plant. (Any additional costs for F-22s are not included in the estimates of savings from this option.)

Critics of deferring C-130J acquisition might argue that it would leave the Air Force with a less capable fleet of intratheater airlift planes. Ultimately, an older fleet could prove more expensive to operate and support. Lockheed Martin contends that the annual cost of operating and supporting a C-130J will be lower than for older C-130s because it has a smaller crew and is easier to maintain.

Although the average C-130E is more than 30 years old, it has flown an average of 21,875 hours—well below its planned 40,000-hour service life. The Air Force had not planned to begin retiring those older C-130s until 2002, but the additional unrequested authorizations by the Congress have led to decisions to retire some of the planes with years of service life remaining. Since the Air Force flies its C-130Es an average of 567 hours per year for active-duty forces and 425 hours to 450 hours per year for reserve crews, it should be able to retain most of those planes well past 2004.

050-15 CANCEL THE ARMY'S COMANCHE HELICOPTER PROGRAM

	Savings (Millions of dollars)	
	Budget Authority	Outlays
Annual		
2000	80	94
2001	326	296
2002	353	395
2003	291	379
2004	285	322
2005	103	129
2006	718	159
2007	821	432
2008	1,583	890
2009	1,655	1,272
Cumulative		
2000-2004	1,334	1,486
2000-2009	6,214	4,368
SPENDING CATEGORY:		
Discretionary		
RELATED CBO PUBLICATION:		
<i>An Analysis of U.S. Army Helicopter Programs</i> (Study), December 1995.		

Many of the Army's helicopters are beyond the end of their useful service life. Initially, the Army had planned to replace some of those older scout, attack, and utility helicopters with more than 5,000 new Comanche (RAH-66) helicopters. Comanche has had a troubled development program, however. The utility version of the helicopter was dropped in 1988 because the program had become too costly. In 1990, the size of the planned purchase was reduced from more than 2,000 aircraft to just under 1,300. Later, the Army delayed the projected start of Comanche production from 1996 to 2005. And last December, the Army requested another restructuring of the program, which could further affect its schedule.

Those changes in the objectives and size of the Comanche program have caused the procurement cost per helicopter to nearly double since the program began—from \$11.5 million (in 1999 dollars) in 1985 to \$21.2 million, based on current Army estimates. With that cost growth, Comanche is now more expensive than the Army's Apache (AH-64) attack helicopter. That cost increase is particularly significant for a helicopter whose development was originally justified on the basis of its being less expensive to buy, operate, and maintain than other attack helicopters. Moreover, the General Accounting Office and the Department of Defense's Inspector General (DoD IG) have stated that costs could grow by as much as another 30 percent. Comanche's high cost calls into question the prudence of pursuing this as-yet-undeveloped aircraft instead of continuing to buy existing, less costly helicopters.

The primary advantage of Comanche over existing aircraft is its sophisticated stealth, avionics, and aeronautics technologies. However, some analysts would argue that the helicopter, which was conceived at the height of the Cold War, will no longer face threats of the same scale or sophistication as those for which it was designed. According to the DoD IG, the Army has not reexamined the mission requirements for Comanche in any depth since the end of the Cold War. Comanche is intended both to serve as a scout for Apache and to fill the scout and light attack role independently. But whether Comanche really does have a unique role to play in Army aviation is unclear. The Army is planning to use Apaches in both scout and attack roles for the next 15 to 20 years, as it did successfully during the Persian Gulf War. The Army also used armed scout helicopters, known as Kiowa Warriors, in the Persian Gulf both as scouts for Apache and as light attack aircraft.

This option would cancel the Comanche program. The Army has already purchased enough Apaches to fill the attack role assigned to 13 of its 18 divisions, but it does need to replace the aging Cobras assigned to the attack aviation units of the remaining divisions. This alternative would buy 519 Kiowa Warriors by the end of 2009 to replace the Cobras still in service. Net savings would total about \$6.2 billion over the 2000-2009 period. Some of the savings could be used to fund a program to continue development of advanced helicopter technologies. Abandoning the Comanche program, however, would mean that the Army would have to rely on helicopters designed in the 1960s and 1970s for years to come.

050-16 CANCEL THE ARMY'S CRUSADER ARTILLERY PROGRAM

	Savings (Millions of dollars)	
	Budget	Outlays
	Authority	
	Annual	
2000	170	98
2001	429	305
2002	453	381
2003	428	355
2004	626	439
2005	589	430
2006	832	524
2007	595	666
2008	623	656
2009	534	613
	Cumulative	
2000-2004	2,106	1,578
2000-2009	5,279	4,467

SPENDING CATEGORY:

Discretionary

The Army plans to invest \$13.5 billion (in 1999 dollars) to develop and procure the Crusader artillery system for rapidly deployable and forward-deployed forces. The Crusader—which includes a self-propelled howitzer and a resupply vehicle—is considered by the Army to be technologically advanced and significantly more effective than the service's current artillery systems.

Supporters cite several reasons why Crusader is needed. The Paladin, the Army's most modern artillery system, is too slow to keep up when armored forces advance. Its range is shorter than that of several foreign systems available to potential adversaries. And Paladin's peak firing rate of four rounds per minute is significantly slower than the 10 to 12 rounds per minute that the Army says it needs. Crusader's current design includes an automated resupply system, which makes a higher firing rate possible and reduces the crew size to six from Paladin's nine. Crusader is also designed with more sophisticated automation and better crew protection.

Some observers, however, question whether a heavy system such as Crusader has a role in the lighter, more mobile force envisioned for the future Army. Some analysts also question how much improvement Crusader will actually deliver. Crusader may only be 9 kilometers per hour faster than Paladin. And it has already encountered some technical difficulties. The original concept called for a gun using liquid propellant. The Army had to abandon that technology in 1996 because of technical and schedule problems. Some Crusader subsystems embody technological innovations that have not yet been proved, and some have no backups in case of failure. For example, if the automatic munition reloader fails, Crusader will not be able to fire at all since it cannot be loaded manually. Those technical risks could prevent Crusader from meeting some of the Army's key requirements. If it failed to do so, Crusader could be no more effective than currently available systems.

Although no existing alternative system meets all of the Army's requirements, some could meet many of those requirements and offer significant improvements over Paladin. A recent report by the General Accounting Office identified the German PzH 2000 self-propelled howitzer or an improved Paladin system as viable alternatives to Crusader. The PzH 2000, for example, fires eight to 10 rounds per minute, and its cross-country speed of 45 kilometers per hour is within the range required for Crusader.

This option would cancel the Crusader program and provide funds to procure 815 PzH 2000 systems with resupply vehicles. That purchase of a new system could hedge against potential threats while freeing \$5.3 billion for the Army to pursue other promising technologies. For fire support in fast-moving advances, the Army could rely on those newer systems or on the multiple-launch rocket system, which it used successfully in that role during the Persian Gulf War.

050-17 CANCEL THE ARMY'S TANK UPGRADE PROGRAM

	Savings (Millions of dollars)	
	Budget Authority	Outlays
Annual		
2000	642	94
2001	356	344
2002	495	418
2003	513	451
2004	197	441
2005	101	298
2006	-12	154
2007	-9	52
2008	-2	11
2009	-2	0
Cumulative		
2000-2004	2,203	1,748
2000-2009	2,277	2,263
SPENDING CATEGORY:		
Discretionary		
RELATED CBO PUBLICATION:		
<i>Alternatives for the U.S. Tank Industrial Base</i> (Paper), February 1993.		

The shrinking of the U.S. military—coupled with the disappearance of a long-time foe and the unprecedented peacetime investment in modern weapons that occurred in the 1980s—has sharply reduced the need for new weapons. In particular, the Army now has enough of the latest type of tank, the Abrams, to equip the forces it plans to field for the foreseeable future. As a result, the Army does not intend to buy new tanks for at least the next 15 years.

Instead, the Army has proposed upgrading about 1,000 M1s (the first model of the Abrams) to a later configuration, designated the M1A2. The upgrade program, which began in 1991 and ends in 2003, has two major goals: to increase the capability of Army tanks and to keep the facilities that produce tanks in business pending the need for a new tank to replace the Abrams. (Most of those facilities are owned by the government and operated by private contractors.)

During the Bush Administration, the Army advocated closing the tank production line and putting it in mothballs. In March 1992, General Colin Powell, then Chairman of the Joint Chiefs of Staff, testified that the Army's current tank was the best in the world. That statement runs counter to the Army's current rationale for upgrading tanks, which is that it needs better ones. Indeed, although the M1A2 is 20 percent more capable than the M1 model (as measured by one scoring system developed for the Defense Department), converting 1,000 M1s to M1A2s would increase the total capability of the Army's 7,880 Abrams tanks by only 3 percent. That slight increase in capability would come at a high price—a total of about \$3 billion over the next 10 years.

This option would cancel the Army's upgrade program but would keep some of the major components of the tank industrial base in a mothballed status. By preserving production facilities, the United States would retain the capability to make new or existing types of tanks in the future. Mothballing the government-owned facilities would require an initial investment. But after taking those costs into account, this option would still save \$642 million in 2000 and a total of \$2.3 billion over 10 years.

Closing the tank production line would have some disadvantages, however. Without an upgrade program, the U.S. inventory would include fewer of the most capable M1A2 tanks. As regional powers acquired better tanks, the absence of M1A2s might erode the United States' advantage in a war, even though the M1A1 remains a highly capable tank. Perhaps the most important drawback of this option is that some companies that manufacture tank components might close and thus be unavailable to produce tanks in the event of a crisis. A related concern is the potential loss of workers whose skills are unique to tank manufacturing.

050-18 RESTRUCTURE OFFICER ACCESSION PROGRAMS

	Savings (Millions of dollars)	
	Budget Authority	Outlays
Annual		
2000	69	67
2001	128	126
2002	183	181
2003	221	220
2004	228	228
2005	234	234
2006	240	240
2007	247	247
2008	253	253
2009	259	259
Cumulative		
2000-2004	829	822
2000-2009	2,062	2,055
SPENDING CATEGORY:		
Discretionary		

In recent years, the military services have slightly increased their annual number of officer accessions (new officers who enter the service). This option would keep overall accessions at the level planned by the Department of Defense but would alter the sources of new officers. Specifically, it would draw more officers from lower-cost commissioning programs—the Reserve Officer Training Corps (ROTC) and Officers Candidate School/Officer Training School (OCS/OTS)—and fewer from the more costly service academies. In addition, it would place a ceiling on the amount that could be spent on each ROTC scholarship recipient. Those changes would save \$69 million in 2000 and a total of nearly \$2.1 billion through 2009.

At present, each service academy graduates slightly fewer than 1,000 second lieutenants or ensigns a year. This option would reduce that number to 625 by cutting the size of the entering class for the three academies from a combined total of nearly 3,000 to 1,875. The estimated savings from that action reflect only the costs that would change in the near term, such as operating expenses and pay for faculty and cadets. (Those savings would be partially offset by additional costs of about \$122 million over five years to procure officers from OCS/OTS and ROTC to replace those from the academies.) In the longer term, savings might also accrue from changes in the academies' physical plant.

Supporters of the service academies have contended that they are necessary to produce future military leaders. That argument has not persuaded most Members of Congress, but past attempts to impose cuts at the academies have been only partly successful. Although class size has declined modestly, academy graduates account for a larger share of officer accessions now than in the early 1980s (14 percent versus 9 percent). This option would restore the accession percentage of academy graduates to its 1980 level by 2002. There is little evidence that the academies have already reduced their class size to the minimally efficient level, as supporters have claimed in arguing that further cuts would not produce savings.

Proponents of the option point out that taking a smaller share of the officer corps from the academies would lead to more diversity, since relatively more officers would come from ROTC and OCS/OTS. Moreover, they contend, the military has drawn much greater percentages of its officers from those sources in the past without any loss of effectiveness.

050-19 REVISE COST SHARING FOR MILITARY HEALTH BENEFITS

Savings
(Millions of dollars)
Budget
Authority Outlays

Annual

2000	460	388
2001	584	552
2002	591	580
2003	598	593
2004	606	603

2005	615	611
2006	624	620
2007	633	629
2008	642	639
2009	652	648

Cumulative

2000-2004	2,839	2,716
2000-2009	6,005	5,863

SPENDING CATEGORY:

Discretionary

RELATED OPTION:

050-20

RELATED CBO PUBLICATION:

Restructuring Military Medical Care (Paper), July 1995.

Some 7.7 million active-duty service members, military retirees, and their families in the United States are eligible to use the military health care system, yet only 5.4 million actually do. Because the Department of Defense (DoD) does not require users to enroll, many of them choose to seek military care on a case-by-case basis to augment other insurance coverage. Thus, military planners face major uncertainties about their patient load and health care costs each year.

The military health system offers three types of coverage: Tricare Prime, a plan similar to health maintenance organizations; Tricare Standard, a traditional fee-for-service insurance program; and Tricare Extra, a preferred provider option. Beneficiaries must enroll in Tricare Prime if they wish to use it, but they may use Tricare Standard or Extra without enrolling.

This option would make three changes to that system. First, all beneficiaries (except those on Medicare) would have to enroll in either Tricare Prime or Standard before using the military health care system. The annual enrollment fee for Tricare Prime would remain the same (zero for active-duty personnel and their families and \$230 for single coverage or \$460 for family coverage for retirees). Under Tricare Standard, however, active-duty personnel would pay no fee but retirees would pay \$115 a year for single or \$230 for family coverage. Second, DoD would adjust enrollment fees for inflation by the annual rate of change in the consumer price index. Third, users of Tricare Prime would pay copayments at military facilities for outpatient care and prescription drugs, just as they do at civilian providers. In addition, all retirees (regardless of the plan they used) would pay small copayments if they received care at military facilities.

Together, those three changes would lower discretionary appropriations by \$460 million in 2000 and \$6 billion through 2009. The savings would stem from enrollment fees, increased copayment charges, and more prudent use of care by beneficiaries. This estimate assumes that the Congress would reduce DoD's appropriations by the amount of revenue collected under the option. However, if the Congress revoked DoD's automatic reimbursement authority, the estimate would take the form of an offset to mandatory spending.

By requiring beneficiaries to enroll, this option would help DoD identify who uses its system. Military providers need to plan for the health care needs of a defined population to develop per capita budgets and build cost-effective delivery networks. (Such savings, however, are not included in this estimate.)

Proponents could argue that the value of DoD's health benefits has risen with advances in medical technology, so users should expect to bear some of the associated cost, just as employees of private firms have. In addition, charging copayments would help curb excessive use of services by creating the same incentives for beneficiaries who receive care on-base as for those who use civilian providers. It would also eliminate the inequity of providing more generous benefits to people who live near a military hospital or clinic.

On the negative side, military families and retirees would view higher charges as an erosion of their benefits. Retention and morale might suffer, even though this option would still offer service members and their families more generous health benefits than many government or private-sector employers do.

050-20 DOWNSIZE THE MILITARY MEDICAL SYSTEM

	Savings (Millions of dollars)	
	Budget	Outlays
	Authority	
<hr/>		
	Annual	
2000	247	98
2001	847	478
2002	2,097	1,356
2003	3,349	2,497
2004	4,225	3,532
2005	4,990	4,386
2006	5,345	4,954
2007	5,725	5,372
2008	6,132	5,776
2009	6,568	6,192
<hr/>		
	Cumulative	
2000-2004	10,765	7,961
2000-2009	39,524	34,641
<hr/>		
<u>SPENDING CATEGORY:</u>		
Discretionary		
 <u>RELATED OPTION:</u>		
050-19		
 <u>RELATED CBO PUBLICATION:</u>		
<i>Restructuring Military Medical Care</i> (Paper), July 1995.		

The extensive medical system run by the Department of Defense (DoD) is the chief source of health care for some 5.4 million people in the United States. DoD argues that the system is necessary to ensure care for service members in wartime. During peacetime, military medical personnel train for war and provide care for active-duty members, their dependents, and retirees and their families. This option would substantially reduce the size of the military health system and instead rely on the Federal Employees Health Benefits (FEHB) program for most peacetime care.

During the Cold War, military medical requirements for wartime were based on the scenario of a large conventional conflict in Europe. But DoD's more recent planning scenarios have led to sharp reductions in medical requirements. Today, between military facilities, hospitals run by the Department of Veterans Affairs (VA), and civilian facilities that have agreed to provide beds in the event of a national emergency, the United States has more than twice the hospital capacity needed to meet wartime demand.

According to a 1995 study by RAND, DoD could eliminate all but 11 of its 80 U.S. hospitals (reducing the wartime capacity by more than two-thirds) and still be able to meet about 60 percent of its total wartime requirement for 9,000 beds. That is a much higher percentage than it met during the Cold War. Civilian and VA hospitals, which only fill about 60 percent to 70 percent of their capacity, on average, would provide the remaining beds during wartime.

Carrying out such an aggressive restructuring of the military medical system would offer substantial savings: \$98 million in outlays in 2000 and nearly \$35 billion through 2009. Those estimates reflect both the savings from operating a smaller military system and the costs of providing coverage under the FEHB program for beneficiaries other than active-duty service members. (DoD would pay the same share of the premiums for FEHB health plans that the federal government pays for employees at other agencies.)

DoD has no plans to make such deep cuts to its health care system. Military medical officials argue that their facilities and the care they provide in peacetime are essential for recruiting and training physicians and ensuring medical readiness. Downsizing that system to such an extent would require DoD to modify the way it trains and prepares for wartime. For example, it would need to strengthen ties with the civilian sector to provide wartime training for military medical personnel and to ensure an adequate supply of wartime beds.

Critics of this option might also point out that enrolling in a plan offered by the FEHB program would require beneficiaries to pay substantially more out of pocket, on average, than they do now for care in the military system. Nevertheless, some FEHB plans would offer improved coverage and so might be worth the higher out-of-pocket costs. Moreover, the value of DoD's health benefits has grown dramatically with advances in technology and medical practices. Thus, it might be reasonable for military beneficiaries to share more of the costs associated with those advances—as many people covered by employer-sponsored plans in the private sector already do.

050-21 CLOSE AND REALIGN ADDITIONAL MILITARY BASES

	Savings (Millions of dollars)	
	Budget Authority	Outlays
Annual		
2000	0	0
2001	0	0
2002	-539	-167
2003	-1,156	-552
2004	-275	-603
2005	664	-166
2006	764	293
2007	402	460
2008	1,559	815
2009	2,595	1,531
Cumulative		
2000-2004	-1,970	-1,322
2000-2009	4,015	1,611
SPENDING CATEGORY:		
Discretionary		
RELATED OPTION:		
050-25		
RELATED CBO PUBLICATIONS:		
Review of <i>The Report of the Department of Defense on Base Realignment and Closure</i> (Letter), July 1998.		
<i>Closing Military Bases: An Interim Assessment</i> (Paper), December 1996.		

Beginning in the late 1980s, the Department of Defense (DoD) sought to reduce its operating costs by closing unneeded military bases. Significant reductions in force structure at the end of the Cold War made many bases unnecessary. Because political and procedural difficulties had long made closing bases nearly impossible, the Congress set up four successive independent commissions on base realignment and closure (or BRAC). Those commissions recommended shutting or realigning (moving departments and facilities at) hundreds of military installations in the United States, Puerto Rico, and Guam. When all of the actions from the four BRAC rounds are completed, DoD will save about \$5.6 billion a year in operating costs, it estimates.

This option would authorize two additional rounds of base closures and realignments. In the long run, such actions can produce substantial savings. However, they require some up-front investment, so costs would increase in the short run. Between 2000 and 2009, this option would reduce DoD's costs by a net total of \$4 billion. Beginning in 2012, the department could realize recurring savings of around \$4 billion per year. Those estimates are based on DoD's experience and current projections for the four earlier rounds of base closings. (The estimates do not include the costs of environmental cleanup, since DoD is obligated to incur such costs regardless of whether it operates or closes bases.)

Closing and realigning additional military bases is consistent with DoD's overall drawdown of forces. By several measures, planned force reductions significantly exceed the projected decrease in base capacity. For example, the department intends to cut the number of military and civilian personnel by 34 percent from the 1990 level. But according to DoD, when all of the previously agreed base closures and realignments have been carried out, the military will still have about 23 percent more base capacity than it needs.

The Secretary of Defense asked the Congress in early 1998 to authorize two more rounds of base closures. In *The Report of the Department of Defense on Base Realignment and Closure* of April 1998, DoD stated that opportunities exist for further cutbacks and consolidations at several types of bases—such as defense laboratories, test and evaluation installations, training facilities, naval bases, aircraft installations, and supply facilities.

Although some analysts believe that DoD should further reduce the number of military bases, others feel that the BRAC cuts have gone far enough in matching the planned reductions in forces. The base structure, they say, should retain enough excess capacity to accommodate new risks to national security that could require a surge in the number of military forces. Opponents of more closures also cite the possible economic effects on local communities. Some suggest that savings could be made by demolishing certain buildings or by achieving other operating efficiencies short of closing bases.

050-22 INCREASE COMPETITION BETWEEN DoD AND PRIVATE-SECTOR HOUSING

Savings (Millions of dollars)		
Budget		
Authority Outlays		
Annual		
2000	576	29
2001	588	250
2002	601	417
2003	614	499
2004	627	561
2005	640	596
2006	654	623
2007	668	639
2008	682	653
2009	697	667
Cumulative		
2000-2004	3,006	1,755
2000-2009	6,347	4,933

SPENDING CATEGORY:

Discretionary

RELATED OPTION:

050-26

RELATED CBO PUBLICATION:

Military Family Housing in the United States (Study), September 1993.

Most military families receive cash allowances for housing and rent or purchase dwellings in the private sector. About one-third, however, live rent-free in on-base housing provided by the Department of Defense (DoD). It costs the federal government about 35 percent more to provide a housing unit than it costs to rent a comparable unit in the private sector. Despite the cost, DoD does not plan to phase out its inventory of housing. Instead, the department is experimenting with public/private partnerships that could provide private capital to replace or revitalize on-base housing units, many of which are nearing the end of their service life. Those partnerships are proceeding more slowly than planned, however, leaving many families in sub-standard units. Moreover, it is uncertain whether such partnerships will reduce the long-run costs to DoD of providing housing.

One reason that DoD provides housing is that on-base units are in high demand among military families. That demand partly reflects the benefits of the on-base lifestyle. But survey data show that the low cost of on-base units to service members is an even more important factor. The allowance that families living in DoD housing forfeit (in effect, the rent they pay) equals only about 60 percent of the costs that the federal government incurs in providing a unit.

This option would reduce the demand for on-base housing by requiring it to compete with private-sector housing. All military families would receive the cash allowance and be free to choose between DoD and private-sector units. DoD—and any firms providing housing in partnership with it—would act like a private landlord, setting rents for on-base units at market-clearing levels (levels at which there would be neither excess vacancies nor waiting lists). They would revitalize or replace an on-base housing unit only if its value to service members (the market-clearing rent it could command) was sufficient to cover both operating costs and amortized capital costs. That criterion would limit DoD to revitalizing or replacing only about 25 percent of its existing housing stock, the Congressional Budget Office estimates. Over the long run, DoD and its partners would cease to provide units in markets where they could not successfully compete with private-sector housing.

Total savings from this option could amount to more than \$6 billion through 2009. The primary source of savings would be lower revitalization and replacement costs as DoD retired aging units rather than investing in ones that could not cover their costs in competition with private-sector housing. Additional savings might result from more efficient management as on-base units were forced to compete with private housing. The housing costs that service members pay out of pocket would not change. If the rents paid to DoD exceeded the housing allowances paid to members living in DoD units, the excess would be returned to service members as a whole through an increase in allowance rates.

This option would let DoD focus on its warfighting mission rather than on real estate management. The change would eliminate waiting lists for on-base units and equalize the value of the housing benefits that DoD provides to families living on- and off-base. Nonetheless, families that chose to live on-base would face higher costs than they do today. In addition, this option would represent a significant break with military tradition. As a result, it could have a negative impact on morale unless it received strong public support from senior military leaders.

050-23 **TRANSFER COMMISSARY OPERATIONS TO A DoD-WIDE EXCHANGE SYSTEM**

Savings
(Millions of dollars)
Budget
Authority Outlays

Annual

2000	930	709
2001	1,011	932
2002	1,093	1,045
2003	1,136	1,110
2004	1,173	1,155

2005	1,211	1,193
2006	1,250	1,232
2007	1,291	1,273
2008	1,332	1,314
2009	1,362	1,346

Cumulative

2000-2004	5,343	4,951
2000-2009	11,788	11,309

SPENDING CATEGORY:

Discretionary

RELATED OPTION:

050-24

RELATED CBO PUBLICATION:

*The Costs and Benefits of Retail
Activities at Military Bases*
(Study), October 1997.

The Department of Defense (DoD) operates two separate retail systems on its military bases for the benefit of current and retired service members and their families. One is a system of commissaries (supermarkets) that relies on an annual appropriated subsidy of about \$1 billion. The other system, which does not directly receive appropriated funds, consists of the military exchanges that provide general retail stores and consumer services. Commissaries are part of a federal agency (the Defense Commissary Agency), whereas exchanges (which are organized under the Army and Air Force Exchange Service, the Navy Exchange Command, and the Marine Corps's exchanges) are nonappropriated-fund instrumentalities of the federal government. As a result, the employees of exchanges are not members of the civil service, and their managers are not constrained by all of the rules that govern federal agencies.

This option would save almost \$12 billion between 2000 and 2009 by consolidating all exchanges and commissaries under a DoD-wide nonappropriated-fund retail entity and then gradually phasing out the commissary subsidy. Greater efficiency in DoD's retail operations would offset much of the lost subsidy. Consolidation would eliminate duplicative systems for distribution, purchasing, and personnel management. It would also free on-base grocery stores from the requirement to employ civil service personnel and from appropriated-fund acquisition rules, thus reducing their operating costs by between \$140 million and \$280 million annually.

More efficient operations would not entirely make up for the loss of the appropriated subsidy; some price increases at on-base stores would also be needed. Thus, one major disadvantage of this option is that it would reduce the benefits that on-base shopping provides to military personnel. Nonetheless, recent trends in costs and sales at commissaries suggest that the benefits they offer may no longer justify the cost of their subsidy. Between 1990 and 1998, the appropriated-fund subsidy rose from 17 percent of commissary sales to 19 percent. Moreover, the level of commissary sales—perhaps the most candid index of the stores' value to their customers—continues to fall. Sales declined by more than 20 percent between 1994 and 1998 (after adjusting for inflation), although the number of patrons with unlimited access to commissaries fell by only about 2 percent during that period. Commissaries in some parts of the country are finding it hard to compete with private grocers who offer store-brand products at low prices, warehouse format, long hours, and varied services.

One recent survey found that commissaries pay significantly more than the Army and Air Force Exchange Service for the same goods. Thus, much of the commissary subsidy may be going to benefit commissary suppliers rather than patrons. Military families might be attracted to a system of exchange-operated grocery stores that could obtain goods at lower prices and offer consumers their choice of name-brand or store-brand items, a variety of products and services in a single location, and convenient hours. Over the long run, this option might be a way to ensure continued access to on-base shopping for current and retired service members.

050-24 **CONSOLIDATE AND ENCOURAGE EFFICIENCIES IN MILITARY EXCHANGE ACTIVITIES**

	Savings (Millions of dollars)	
	Budget	Outlays
	Authority	
<hr/>		
	Annual	
2000	59	45
2001	83	74
2002	109	100
2003	112	109
2004	116	114
2005	119	118
2006	123	122
2007	127	126
2008	131	130
2009	134	133
<hr/>		
	Cumulative	
2000-2004	479	440
2000-2009	1,115	1,068
<hr/>		

SPENDING CATEGORY:

Discretionary

RELATED OPTION:

050-23

RELATED CBO PUBLICATION:

*The Costs and Benefits of Retail
Activities at Military Bases*
(Study), October 1997.

The Department of Defense's (DoD's) three military exchange systems—the Army and Air Force Exchange Service, the Navy Exchange Command, and the Marine Corps system—provide a wide array of retail stores and consumer services at military bases. With combined annual sales of approximately \$9 billion, operating costs of about \$2 billion, and 80,000 employees, the exchanges constitute one of the largest retail businesses in the United States.

The Congress does not directly appropriate funds to the exchanges, but DoD provides them with about \$400 million worth of free services each year. Those services include maintaining the exterior of exchange buildings (such as roofs, windows, and heating and cooling systems), transporting goods overseas, and providing utilities at overseas stores. The exchanges' federal status offers other advantages as well: DoD exchanges are exempt from state and local excise taxes, have a monopoly over on-base sales of goods and services, and have access to free land and interest-free capital. Those exemptions and other subsidies are worth more than \$1 billion a year, the Congressional Budget Office estimates.

A portion of that annual subsidy is translated into lower prices for military personnel and their families and into exchange earnings that support the services' morale, welfare, and recreation (MWR) programs. Yet another portion is absorbed by inefficiencies. Private retailers in the United States must be efficient to survive in the face of competition. The subsidies that exchanges receive, by contrast, alleviate the pressure of competition and allow the exchanges to operate in ways that private retailers could not afford to. For example, although economies of scale in the private sector often force private retailers to merge, DoD's three exchange systems remain separate—despite studies that have repeatedly shown that consolidation would reduce operating costs. Subsidies also distort the incentives that exchange managers face. Because DoD provides free utilities overseas, the Army and Air Force Exchange Service can operate an ice cream production line in Germany without regard to utility costs. And because DoD pays to transport goods overseas, the exchanges can ship beer and carbonated beverages abroad rather than buying them locally.

This option would consolidate the three exchange systems into a single entity and introduce incentives for more efficient operations. Rather than receive DoD support services free of charge, the exchanges would receive a lump-sum appropriation equal to the historical cost of those services and would (like DoD's industrially funded activities) reimburse the providers of those services. Over the long run, consolidating the three exchange systems could save about \$50 million a year in overhead costs. Requiring the exchanges to reimburse DoD for support services would save another \$40 million a year if it induced the exchanges to reduce the costs of those activities by 10 percent. In all, savings would total \$1.1 billion between 2000 and 2009. Initially, the savings might provide additional funding for MWR activities. Over the long run, the increase in exchange earnings would allow DoD to provide its planned level of MWR activities with less support from appropriated funds.

050-25 DEMOLISH OBSOLETE AND EXCESS STRUCTURES

	Savings (Millions of dollars)	
	Budget Authority	Outlays
Annual		
2000	-49	-36
2001	-37	-39
2002	-24	-26
2003	-11	-13
2004	51	36
2005	52	52
2006	53	53
2007	54	54
2008	56	55
2009	57	56
Cumulative		
2000-2004	-69	-79
2000-2009	203	192
SPENDING CATEGORY:		
Discretionary		
RELATED OPTION:		
050-21		

This option would accelerate the demolition and disposal of various excess, obsolete structures owned by the Department of Defense (DoD). Such structures include military family housing, defense agency facilities, and runways, piers, towers, and fuel tanks. Although demolition would entail up-front costs, DoD would eventually save money because of the reduced costs for maintenance, utilities, and security. Estimates by DoD suggest that demolition projects pay for themselves in just five years and then continue to produce savings.

The defense drawdown has left excess structures at military bases. Many are in poor repair and have no remaining asset value. In some cases, they are dangerous eyesores; in others, the structures attract marginal users who benefit from occupying them only because the users are not required to pay the full costs of the utilities and other support that the base provides. DoD currently maintains about 32 percent more square feet of facilities per full-time worker (active duty and civilian) than it did in 1989.

In accordance with a management reform initiated by the Office of the Secretary of Defense in 1997, each of the military services has developed a demolition program. Those programs could result in the elimination of 80 million square feet of excess, obsolete buildings by 2003 and lead to annual recurring savings of \$160 million. However, that initiative did not address excess, obsolete facilities occupied by the defense agencies (including the Defense Health Agency), the services' family housing, or structures other than buildings (such as piers, runways, and towers). This option would provide additional up-front funding of \$60 million a year from 2000 to 2003 to demolish and dispose of those types of excess structures. The Congressional Budget Office estimates that this option would yield annual recurring savings of about \$50 million beginning in 2004. Over the 2000-2009 period, CBO estimates, the additional demolitions could provide total net savings of approximately \$200 million.

If it chose to, the Congress could allow DoD to use the savings from this option to repair and revitalize other military facilities. Although that approach would not result in any easily identifiable budgetary savings, it might nonetheless be a worthwhile investment because deferring repairs on buildings can ultimately result in higher annual costs for maintenance.

050-26 CREATE INCENTIVES FOR MILITARY FAMILIES TO SAVE ENERGY

	Savings (Millions of dollars)	
	Budget	Outlays
Annual		
2000	4	4
2001	27	27
2002	60	60
2003	75	75
2004	77	77
2005	78	78
2006	80	80
2007	82	82
2008	83	83
2009	85	85
Cumulative		
2000-2004	244	244
2000-2009	652	652
SPENDING CATEGORY:		
Discretionary		
RELATED OPTIONS:		
050-22 and 050-27		
RELATED CBO PUBLICATION:		
<i>Military Family Housing in the United States</i> (Study), September 1993.		

The Department of Defense (DoD) spent almost \$360 million last year on gas, electricity, and water for the approximately 230,000 family housing units that it owns in the United States. DoD's efforts to reduce those costs by promoting resource conservation have met with limited success. One reason is that service members living in DoD-owned housing do not pay for their utilities and may not even know how much gas, electricity, and water they use. Landlords in the private sector have found that utility use typically declines by about 20 percent when tenants are responsible for their own utility bills.

This option would install utility meters in DoD housing units, provide cash utility allowances to the families living there, and then charge for utilities based on actual use. Residents who spent less than their allowance could keep the savings; those who spent more would pay the extra cost out of pocket. The budget for allowances would be set equal to the expected cost of utilities under the new system, or about 80 percent of what DoD now spends. The department would allocate that amount among the different housing units on the basis of their size, energy efficiency, and geographic location. Once the program was established, the allowance budget for each year could be set equal to the previous year's actual utility charges plus an adjustment for inflation.

Because families that conserved aggressively would receive more in allowances than they would be charged for utilities, this option would reward people who made an effort to conserve energy. Families that did not economize would face utility bills in excess of their allowance. However, there is a risk that the allowances for some units might not accurately reflect their characteristics. People living in such a unit might find that the allowance did not cover all of their utility costs even after they had made reasonable efforts to conserve energy. (At their next duty assignment, however, they might benefit from an allowance that was too generous given the characteristics of their housing unit.)

The principal advantage of this option is that it would reduce DoD's costs by giving military families who live on-base the same incentives for conservation as most homeowners and renters—including military families living off-base. After an initial phase-in period (during which DoD would incur the upfront costs of determining allowance amounts, setting up a billing system, and installing meters), this option could provide DoD with total savings of about \$650 million from 2000 through 2009.

Many DoD housing units already include a connection where a meter could be installed. Nonetheless, a temporary exemption from the metering requirement (and from the utility allowances and charges) could be given for some older units if the Secretary of Defense certified that metering them was not feasible.

050-27 ALLOW FEDERAL AGENCIES TO BARGAIN FOR ELECTRICITY

Savings
(Millions of dollars)
Budget
Authority Outlays

Annual

2000	158	158
2001	155	155
2002	133	133
2003	85	85
2004	26	26

2005	26	26
2006	26	26
2006	26	26
2008	26	26
2009	26	26

Cumulative

2000-2004	556	556
2000-2009	684	684

SPENDING CATEGORY:

Discretionary

RELATED OPTIONS:

050-26 and 270-07

RELATED CBO PUBLICATIONS:

Electric Utilities: Deregulation and Stranded Costs (Paper),
October 1998.

Should the Federal Government Sell Electricity? (Study),
November 1997.

The federal government spends more than \$2 billion per year in the United States on electricity, of which about 50 percent is purchased through the Department of Defense (DoD). Although the government is a large consumer of electricity, it pays full retail prices. A provision in a continuing appropriation act for fiscal year 1988 (Public Law 100-202, section 8093) requires federal agencies to conform to state laws regarding electricity purchases. Some states have already allowed retail customers to choose their electricity supplier and negotiate lower prices. This option would let the federal government realize such savings in all states, regardless of state regulations on retail customers. The resulting savings could total around \$684 million over 10 years if agencies' appropriations were reduced by the expected decrease in electricity bills.

The federal government would face lower electricity prices if it purchased power on a competitive basis. In that situation, suppliers would have an incentive to provide electricity at the lowest possible cost and offer new services. Under traditional regulation, utilities generally gave customers the same product: reliable electricity at a fairly high, but uniform, price. If the federal government was allowed to negotiate for electricity, suppliers would be encouraged to furnish a greater variety of electricity services—with different prices and different degrees of reliability, depending on what the federal government wanted or needed. Some states, such as California, Massachusetts, Pennsylvania, and Rhode Island, have already introduced retail competition, allowing all retail customers—including federal agencies—to choose their electricity provider. Any reduction in federal spending because of Congressional action would have to take into account that those states already allow price competition and others will allow it before 2009.

Several bills to restructure the electricity industry were introduced in the 105th Congress. They would have allowed all customers, not just the federal government, to buy electricity in a competitive market. A comprehensive electricity-restructuring bill like one of those may be needed for the federal government to realize all of the savings from negotiating lower prices for electricity. Otherwise, an electricity provider that once served the federal government might be reluctant to lose so large a customer and could try to impede the government's choice of suppliers. (In some parts of the country, no alternative suppliers may be available.) Also, the federal government could be subject to surcharges if it broke a contract with its old supplier. Such surcharges would diminish the savings from this option. The federal government might also be perceived as unfair if it was allowed to choose suppliers but no other retail customer was. Prices to other consumers could rise if the federal government chose a new supplier and the utility that once served it could not search for alternative buyers for the electricity.

050-28 SELL SURPLUS REAL PROPERTY OF THE DEPARTMENT OF ENERGY

	Savings (Millions of dollars)	
	Budget Authority	Outlays
Annual		
2000	0	0
2001	3	3
2002	3	3
2003	3	3
2004	3	3
2005	1	1
2006	1	1
2007	1	1
2008	1	1
2009	1	1
Cumulative		
2000-2004	12	12
2000-2009	17	17

SPENDING CATEGORY:

Mandatory

The Department of Energy (DOE) controls about 2.4 million acres of land, much of it surrounding sites in the West and Southeast that have contributed to the nation's efforts to develop nuclear weapons. DOE's Office of Inspector General (IG) recently identified 309,000 acres that it considers no longer essential to carrying out the department's core missions of weapons dismantling, environmental cleanup, technology development, and scientific research. That acreage is part of the Oak Ridge Reservation in Tennessee, the Hanford Site in Washington, and the Idaho National Engineering Laboratory. Additional real property that may be excess but was not evaluated in the IG report exists at such DOE facilities as the Nevada Test Site, the Los Alamos National Laboratory in New Mexico, the Fermi National Accelerator Laboratory in Illinois, and the Savannah River Site in South Carolina.

To demonstrate the potential savings from disposing of those properties, this option would require DOE to sell at market value 16,000 acres at the Oak Ridge Reservation that the IG has identified as excess. (The IG proposed transferring other excess property to the Department of the Interior for management as a natural resource.) That sale—conducted over four years to minimize the effect on local land values—could bring in \$17 million during the 2000-2009 period. That sum excludes any savings associated with reducing DOE's liabilities for payments to local governments in lieu of taxes or the costs of cleaning up future accidents. The estimate also assumes that the sale would be exempted from requirements of the Federal Property Administrative Services Act to first offer surplus property to state and local governments.

Proponents of keeping that land argue that DOE's mission is changing to include the stewardship of land as a valuable national resource. Most of the acreage in question was used as buffer lands and has been little touched in the past 50 years. In line with that land's unique qualities, DOE has established environmental research parks at seven of its properties to protect various species and cultural sites and to provide a natural laboratory for research and environmental monitoring. It has also made agreements with the Fish and Wildlife Service and the Bureau of Reclamation to manage certain areas. Moreover, some of the land (excluding the acres at Oak Ridge to be sold in this option) may be contaminated by hazardous materials or unexploded ordnance, which would have to be disposed of before transfer could occur. (Such disposal would diminish the savings from this option.) In addition, DOE still needs buffer lands to control the future spread of contaminants from its nuclear sites.

On the positive side, selling unneeded property would not only save money but also make the land available for more uses, including agriculture, recreation, and residential or commercial development. According to the IG, cleanup will be necessary at only a small part of the acreage. Moreover, the government would still have to pay cleanup costs if it kept or transferred the property rather than selling it.

050-29 ELIMINATE CARGO PREFERENCE

	Savings (Millions of dollars)	
	Budget Authority	Outlays
Annual		
2000	166	123
2001	179	170
2002	192	185
2003	205	199
2004	218	212
2005	218	216
2006	218	216
2007	218	217
2008	218	217
2009	218	217
Cumulative		
2000-2004	960	889
2000-2009	2,050	1,972
SPENDING CATEGORY:		
Discretionary		

The Cargo Preference Act of 1904 and other laws require that U.S.-flag vessels be used to carry certain government-owned or government-financed cargo that is shipped internationally. Eliminating cargo preference would lower federal transportation costs by allowing the government to ship its cargo at the lowest available rates. That would reduce the government's costs by \$166 million in 2000 and a total of \$2 billion over the next decade.

Four federal agencies—the Department of Defense (DoD), the Department of Agriculture (USDA), the Agency for International Development (AID), and the Department of Energy (DOE)—account for about 97 percent (by weight) of the government shipments subject to cargo preference laws. The preference applies to nearly all DoD freight, three-quarters of the USDA's shipments of food aid, foreign assistance associated with AID, and oil shipments for DOE's Strategic Petroleum Reserve. Roughly 70 percent of the savings from eliminating cargo preference would come from defense discretionary spending, with the other 30 percent from nondefense discretionary spending.

Supporters of cargo preference argue that it promotes the economic viability of the nation's maritime industry. That industry has suffered at the hands of foreign competition in recent decades. Under federal law, U.S. mariners must crew U.S. vessels, and in general, U.S. shipyards must build them. Because U.S.-flag ships face higher labor costs and greater regulatory responsibilities than foreign-flag ships, they generally charge higher rates. Without guaranteed business from cargo preference, up to two-thirds (by tonnage) of the roughly 130 U.S.-flag vessels still engaged in international trade would leave the fleet. They would do so either by reflagging in a foreign country to save money or by decommissioning if they could not operate competitively. Supporters also argue that cargo preference helps bolster national security by ensuring that U.S.-flag vessels and U.S. crews are available during wartime. Finally, eliminating cargo preference could cause U.S. ship operators and shipbuilders to default on loans guaranteed by the government. Such defaults could increase mandatory spending by about \$10 million over the next several years.

Critics of cargo preference say it represents a subsidy of private industry by taxpayers, which simply helps a handful of carriers preserve their market share and market power. That subsidy equals about \$1.5 million per ship per year. Opponents also point out that even DoD officials question the national security importance of the Merchant Marine fleet. DoD has invested in a fleet of its own specifically for transporting military equipment. It also contracts with foreign-flag ships when needed. In addition, critics of cargo preference argue that the U.S. government is at a competitive disadvantage in selling surplus agricultural commodities abroad because it must pay higher costs to transport them.